

**ORDINANCE NO. 2010-11**

**AN ORDINANCE IN THE CITY OF CANTON, TEXAS, ESTABLISHING REGULATIONS FOR DRAINAGE AND STORM WATER MAINTENANCE; REPEALING ALL ORDINANCES IN CONFLICT; PROVIDING A SEVERABILITY CLAUSE; PROVIDING FOR A PENALTY OF FINE NOT TO EXCEED THE SUM OF TWO HUNDRED DOLLARS (\$200.00) FOR EACH OFFENSE; AND PROVIDING AN EFFECTIVE DATE**

**WHEREAS**, the City of Canton, Texas, desires to regulate as a municipal utility the drainage of water within the City for the health and safety of its citizens;

**NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF CANTON, TEXAS:**

**SECTION I. COMPLIANCE**

All commercial and residential development plans, site plans and subdivisions plats submitted to the City of Canton shall comply with the provisions of these regulations and any other applicable regulations. Those plats of developed property on which no new structures or additional impervious coverage are planned shall be exempt from the provisions of these sections until such time that new structures or additional impervious surfaces are proposed.

**SECTION II. STORM WATER MANAGEMENT REQUIREMENTS**

The Planning and Zoning Commission will not approve any plat, plan or subdivision which does not meet the minimum requirements of this ordinance in making adequate provision for control of the quantity of storm water run-off to the benefit of both future owners of property within the subdivision and other lands upstream or downstream within the watershed. It shall be the responsibility of the subdivider to design and construct a system for the collection and transport of all storm water run-off flowing onto and generated within the subdivision in accordance with the following:

- A. the requirements of these regulations;
- B. standard engineering practices, as recommended by the City Engineer;
- C. approved plans;
- D. the principles and precedents of storm water law established by the Texas Water Code; and
- E. North Central Texas Standard Specifications for Public Works Construction adopted by the City of Canton.

### SECTION III. DESIGN STANDARDS

- A. Basic Design Objectives - In general, the storm water management system shall be designed and constructed in a manner which promotes the development of a network of both natural and constructed drainage ways throughout the community and so as to:
1. Retain natural floodplains in a condition that minimizes interference with floodwater conveyance, floodwater storage, aquatic and terrestrial ecosystems and ground and surface water;
  2. Reduce exposure of people and property to the flood hazard and nuisance associated with inadequate control of run-off;
  3. Systematically reduce the existing level of flood damages;
  4. Ensure that corrective works are consistent with the overall goals of the City;
  5. Minimize erosion and sedimentation problems and enhance water quality;
  6. Plan for both the large flooding events and the smaller, more frequent flooding by providing both major and minor drainage systems;
  7. Minimize future operational and maintenance expenses; and
  8. Reduce exposure of public investment in utilities, streets and other public facilities (infrastructure)
- B. General Design Requirements:
1. The storm drainage system shall be separate and independent of any sanitary sewer system and its use shall not interfere with the operation and maintenance of road networks or utility systems.
  2. Each lot, site and block within the subdivision shall be adequately drained as prescribed in the City's construction standards and specifications for roads, streets, structures and utilities. Any use of retaining walls, swales, retention basins or other planned improvements for storm water control shall be indicated on the preliminary plat.
  3. No subdivision will be approved which calls for building within a regulatory floodway of any stream or watercourse. The City of Canton may, when it deems necessary for the protection of the health, safety or welfare of the present and future population, prohibit subdivisions and/or development of any property which lies within a designated regulatory floodway of any stream or watercourse.
  4. All lots or building sites within a subdivision shall be accessible to a public street during 100-year design storm conditions as prescribed in the City's construction standards and specifications for roads, streets, structures and utilities. Proof of access shall be included with the final construction plans.

5. All design calculations shall be prepared and submitted by a Texas registered professional engineer for review by the City Engineer.
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- C. Areas subject to inundation under design storm conditions, 100-year frequency storm event, shall be indicated with the minimum floor elevation of each lot so affected on a certified copy of the final plat submitted for filing. The Planning & Zoning Commission may, when it deems necessary for the protection of the health, safety or welfare of the present and future populations place restrictions on the subdivision regarding the design and use of areas within a drainage way or floodplain. The Planning & Zoning Commission will not approve any subdivision of land within the floodplain of any stream or watercourse unless the applicant demonstrates that the subdivision and all development anticipated therein will comply with the requirements of this ordinance.
  - D. Design of all drainage facilities, including streets, inlets, storm sewers, outfall, culverts and ditches, shall conform with the City's construction standards and specifications for roads, street, structures and utilities and the Texas Department of Transportation standards for storm sewers, culverts and bridge design.
  - E. All drainage facilities shall be designed to intercept, detain and transport the projected run-off from the twenty-five (25) year frequent storm. Overflow and transport provisions shall be provided for the one hundred (100) year storm. Engineering calculations, modeling results and hydraulic profile drawings shall be submitted by the developer's engineer for review by the City Engineer.
  - F. Projected run-off rates for the design of drainage facilities shall be based on the expected ultimate developed state of the upstream contributing area. Said ultimate developed state shall be based on the maximum intensity allowable under existing zoning and approved plans with the contributing area.
  - G. All development establishing impervious cover or otherwise modifying an existing site shall incorporate facilities to prevent any increase in the peak rate of run-off from a twenty-five (25) year frequency storm. The City may waive this requirement under one or more of the following circumstances:
    1. Approved off-site storage is provided for the required regulation of peak flows and adequate conveyance of storm water flows from the site to the off-site storage facility is demonstrated.
    2. Development of a one, two or three family residential structure on any legally-platted lot creates no more impervious groundcover than thirty-five (35%) per cent of the gross lot surface area exclusive of any area within the one hundred (100) year floodplain.
    3. Certified engineering data and calculations are presented which demonstrate the absence of adverse impact on all downstream conveyances and property between the downstream property line and the receiving major waterway.
    4. Certified engineering data and calculations are presented which fully describe, explain and justify recommended alternatives to detention.

5. The increase in run-off does not exceed ten (10%) per cent of the existing condition run-off up to a maximum increase of five (5) cubic feet per second, and said run-off does not affect adjoining property.
6. The property is adjacent to a major waterway and, in the judgment of the City Engineer, waive of detention requirements will not result in an increase in the peak flood flow of the major waterway. Waiver of this requirement for any reason shall not relieve the owner of responsibility under civil law to adjacent and downstream property owners.
7. Design of major drainage ways through a subdivision and major structures such as multiple culverts, box culverts or bridges across a major drainage channel shall require a letter requesting a local floodplain map amendment from the Federal Emergency Management Agency (FEMA). This request shall be submitted to FEMA prior to final construction plan approval. Whether or not a drainage way, structure, or channel are classified as "major" shall be determined by the City Engineer.
8. **Drainage Channels**
  - a. The limits of the twenty-five (25) year and one-hundred (100) year storm event shall be determined for all water courses unless an exception is granted by the City Engineer. Calculations for storm events shall utilize the rational method and TxDOT design procedures for smaller watersheds and the SCS or HEC methods for larger watersheds.
  - b. No placement of fill material or channel modifications shall be undertaken within the area of the one hundred (100) year floodplain without written approval of the City. Channel modifications may include residential construction, timber removal and site preparation. Such approval shall be based upon sealed engineering data and calculations furnished by the applicant and approved by the City Engineer. Channel modifications that alter the current Flood Hazard Boundary Map study parameters of the City of Canton on file at FEMA will not be approved until a Letter of Map Revision (LOMR), or other appropriate letter is prepared, and submitted to FEMA by the developer's engineer.
  - c. All open ditches in all subdivisions that are used to carry surface run-off shall be lined for erosion protection. The height of the lining shall be adequate for the calculated depth at design flow plus one (1) foot free-board. Side slopes of earthen and grassed channels shall not be steeper than one (1) foot vertical rise to four (4) feet horizontal distance. In new subdivisions, the developer shall provide all the necessary easement and right-of-way required for drainage structures, including storm sewers and open flow channels. Earthen channels may be allowed where the velocity of the water does not exceed six (6) feet per second nor a slope greater than 1.0%. The earthen channels shall have established grass prior to issuance of any building permits. All bends in earthen channels shall be constructed with approved concrete rip-rap within the limits of the curve plus five (5) feet minimum upstream and downstream. The side slopes of earthen channels shall be no steeper than one (1) foot vertical rise to four (4) feet horizontal distance. Easement width for a storm sewer pipe shall be not less than twenty (20) feet, and the easement width for

open channels shall be at least twenty (20) feet wider than the design water surface elevation, fifteen (15) feet of which shall be on an open side to serve as access way for maintenance purposes. The channel easements shall not be fenced and shall be mowed by the property owners.

- d. All constructed or modified earthen channels shall be designed utilizing a side slope of 4:1, or flatter, to allow for future maintenance and to promote adequate slope stability. As a minimum, all slopes shall be hydromulched, sodded or seeded and stabilized with an erosion control mat.

## 9. Streets and Storm Sewer

- a. All street sections shall be in accordance with City standards. The allowable design drainage capacity for storm water flow at the gutter at the twenty-five (25) year storm flow shall be no deeper than the top of the curb.
- b. Depth of flow in streets is to be controlled to allowable levels by modification of crossfall, gradient changes or the use of curb inlets and/or curb drains and storm sewers.
- c. Streets and underground storm drains shall be designed to accommodate a twenty-five (25) year frequency storm with adequate overland relief for the one hundred (100) year storm. Design of all bridges, culverts, underpasses and open channels are to be based on a twenty-five (25) year frequency. All bridges and culverts to be built in the floodplain shall comply with the established floodplain regulations and analyzed for a 100-year event.
- d. Water in excess of that permissible in streets with allowable depth or spread of water shall be carried in storm sewers or open ditches, not in the street right-of-way.
- e.. Street grades shall be such that excessive sand deposition from low water velocities or pavement scouring from high velocities is to avoided as far as practical.
- f. Concrete valley gutters shall be provided when necessary to carry the water flow across all intersections. Concrete valley gutters shall be six (6) inches thick and a minimum of ten (10) feet wide. The valley gutters shall be poured monolithic with the curb returns. All intersection radii are to be twenty (20) feet or greater at the curb line. Where water flows from a street directly into an open watercourse, an approved structure shall be used for the transition.
- g. Where storm sewer are required, inlets shall be spaced so that the spread in the street for the design flow (25-year storm) shall not exceed one third (1/3) of the overall roadway width from face to face of curbs. Inlets will be sized using an allowable capacity determined using TxDOT design manual, taking into account street grade and cross-slope for a throat height of five (5) inches and shall be designed so as to conform to city construction standards.
- h. Design of storm sewers, outfalls, culverts and drainage ditches shall conform to the following general requirements.

- (1) Manholes (inlets or junction boxes) shall be provided at all changes in grade or alignment, sewer intersections, and at a maximum of 1,000 feet on straight lines. Design of manholes shall conform to the current city construction standards.
- (2) Storm drains shall be reinforced concrete pipe (RCP), American Society Testing Materials, Standard C76, Class 3 pipe. Pipe for storm drains shall be constructed to the bank of the receiving drainway and shall have a minimum cover of not less than one (1) foot over the top of the pipe. Erosion control measures shall be taken at the outlet of the pipe. When exit velocities exceed six (6) fps at the twenty-five (25) year storm, velocity attenuation structures shall be required.
- (3) Wherever possible, outfalls from storm sewers and ditches into natural drainage ways shall enter at the grade of the natural drainage channel. The subdivider's engineer shall design drop-type outfall structures or shall otherwise provide adequate protection against erosion.

#### 10. Bridges and Culverts

- a. All bridge and culvert structures shall be designed to carry and/or contain the upstream runoff from a twenty-five (25) year storm.
- b. Run-off from the one hundred (100) year storm shall not top the road surface at a bridge or culvert crossing for an arterial or collector street crossing and shall not exceed a depth of six (6) inches on a local street crossing.
- c. All bridge and culvert structures shall be designed such that the structural integrity of the roadway shall not be diminished by the twenty-five (25) or one hundred (100) year storm event.
- d. Bridges are to be constructed at all street crossings over the major streams in the City and shall have the proper dimensions to fit the proposed channel sections given in the drainage section of the City's comprehensive plan or as stipulated by the City. All bridges in the floodplain shall comply with established floodplain regulations.

#### 11. Computations, Plans and Construction

- a. Plans and computations for proposed drainage facilities shall be certified with the seal of the developer's design engineer, and submitted to the City Engineer for acceptance prior to approval of construction plans. Approval shall be in writing from the City Engineer hired by the City of Canton.
- b. Computations for all drainage related designs shall be submitted with the plans for review. Data submitted shall include a drainage area map, a summary of methodology employed and resulting data, land use and run-off coefficient assumptions, and other pertinent hydrologic and hydraulic data. Failure to include surrounding or off-site drainage patterns is cause for refusal to review other data submitted.
- c. The City shall make such inspections as are deemed necessary to assure

proper installation. Neither the review nor approval of such plans, nor the inspection of the completed work, will create any liability on the part of the City.

- d. Following construction, but prior to acceptance of improvements or issuance of a building permit, the design engineer shall furnish one (1) set of reproducible "AS BUILT" plans for each project, bearing certification by a Texas registered professional engineer.
- e. Plans for all subdivisions shall include lot grading plans showing flow direction arrows. Certificates of Occupancy will not be issued for lots not graded in accordance with approved grading plans or approved amendments.

## 12. Building Permits and Utility Connections

- a. Plans submitted for building permits and/or utility connections other than single family residential or duplex construction, and for those projects already in compliance with this ordinance, shall include the necessary drainage-related facilities designed and provided for in compliance with this Ordinance and the City's construction standards and specifications for roads, streets, structures and utilities.
- b. Plans and design calculations for all drainage facilities shall be submitted to the City for acceptance prior to issuance of any permit within the development or subdivisions.
- c. Detention of water on parking areas shall not result in a water depth of more than six (6) inches at peak overflow elevations. Acknowledgement of detention depths within the site of a development shall be provided by the developer.
- d. Erosion control techniques which conform to sound engineering practices shall be implemented during construction and at its completion to limit erosion and sedimentation to that level, or to a lesser level than that, existing prior to development.
- e. Fences shown on the site plan shall be constructed and located so as not to interfere with the runoff of a lot. Fences shall not be permitted across platted drainage channels unless provided with openings for drainage.
- f. Property located within the one hundred (100) year floodplain, to the extent that such property is deemed by the City to be necessary to provide adequate and proper drainage for the City, shall be dedicated to the public as a drainage easement which may be used as public open space.

## 13. Drainage Easements

### a. General Requirements

- (1) Where a subdivision is traversed by a watercourse, drainage way, channel or stream, or where a detention facility is required, there shall be provided a storm water easement or drainage right-of-way conforming substantially to the lines of such watercourse or facility and of such width and construction to contain the design storm and

required one (1) foot freeboard. When parking lots or other approved use areas serve a dual function, including detention, those areas shall be designated on the plat as maintained by an open channel with landscaped banks having adequate width to contain the volume of flow generated by the design storm under ultimate development conditions.

- (2) Unlined open drainage channels or ditches shall not be permitted on residential lots. Linings shall be concrete, unless otherwise approved by the City.

b. Design Requirements

- (1) Where topography or other conditions are such as to make impractical the inclusion of drainage facilities within road rights-of-way, perpetual unobstructed easements at least fifteen (15) feet in width for such drainage facilities shall be provided across property outside the road lines and with satisfactory access to the road. Easements shall be indicated on the plat. Drainage easements shall be carried from the road to a natural watercourse or to other drainage facilities.
  - (2) When a proposed drainage system will carry water across private land outside the subdivision, appropriate drainage rights must be secured, documented on the plat, and drawn on the construction plans.
  - (3) Low-lying lands along watercourses subject to flooding or overflowing during storm periods shall be preserved and retained in their natural state as drainage ways except where modification can be shown to benefit the community and as approved by the City of Canton. All development activity within the regulatory floodplain must comply with the City of Canton and FEMA floodplain management regulations.
  - (4) All sedimentation, filtration, detention and/or retention basins and related appurtenances shall be situated within a drainage easement. The owners of the tracts upon which are located such easements, appurtenances and detention facilities shall maintain same and be responsible for their upkeep. Notice of such duty to maintain shall be shown on the plats.
14. Drainage facilities shall be designed to serve the entire subdivision. The City of Canton may approve deferral of design of drainage facilities, if any are required, to the detailed development plan. For all other subdivisions, design of drainage facilities shall be completed with other required construction plans in order to ensure adequate drainage easements and other reservations on the plat.
  15. The requirements set forth herein are not intended to be exhaustive and wherever it is necessary to make additional requirements in order to maximize the effectiveness of the drainage plan in question, such requirements shall be made by the City Engineer and the City of Canton.



**SECTION IV. VARIANCES**

Where the City Council of the City of Canton, Texas, finds that extraordinary hardships may result from a strict compliance of this ordinance, it may vary the regulations so that substantial justice may be done and the public interest secured; provided that such variation shall not have the effect of nullifying the intent and purpose of these regulations. Such variances and modifications as may be granted shall be at least a three-fourths majority of the Council.

**SECTION V. VIOLATIONS AND PENALTIES**

Any person, firm, or corporation found guilty of violating any of the provisions or terms of this ordinance shall be subject to a fine not to exceed the sum of two hundred dollars (\$200.00) for each offense, together with the costs of such prosecution. Each and every day the offense continues shall be deemed to constitute a separate offense. In addition to and cumulative of all other penalties, the City shall have the right to seek injunctive relief for any and all violations of this ordinance.

**SECTION VI. EFFECTIVE DATE**

The City Manager of the City of Canton is hereby authorized and directed to cause a true and correct copy of the caption, penalties, and effective date of this ordinance to be published in a newspaper having general circulation in the City of Canton, Texas, prior to its effective date. Following the publication, this ordinance shall be in full force and effect.


**SECTION VII. REPEAL OF CONFLICTING ORDINANCES**

All ordinances or parts of ordinances conflicting with any of the provisions of this ordinance are hereby repealed.

**SECTION VIII. SEVERABILITY CLAUSE**

That if any provision or any section of this ordinance shall be held to be void or unconstitutional, such holding shall in no way affect the validity of the remaining provisions or sections of this ordinance, which shall remain in full force and effect.

PASSED, ADOPTED AND APPROVED by a majority of the Canton City Council on this the 17<sup>th</sup> day of June, 2010.

  
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William R. Wilson, Mayor

ATTEST:  
  
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Julie H. Seymore, City Secretary